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Presents 5 symposium reports discussing social relations; economic affairs; science and technology; health; and culture and values. The symposiums, sponsored by the Regional Commission on Interrelationships of Secondary Schools, Colleges, and Professional Schools, were designed to gain perspective and guidance on the needs of education in our times from persons in positions of leadership. The commission was established in 1958 to attempt to coordinate the efforts being made by educational institutions in the Upper Ohio Valley Region.

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Today's Leaders Look at Tomorrow's Learning

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THE REGIONAL COMMISSION ON INTERRELATIONSHIPS OF SECONDARY SCHOOLS, COLLEGES, AND PROFESSIONAL SCHOOLS

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Today's Leaders
Look at
Tomorrow's Learning

The Regional Commission on Interrelationships
of Secondary Schools, Colleges and Professional Schools

UNIVERSITY OF PITTSBURGH, PITTSBURGH 13, PENNSYLVANIA
1959

THE REGIONAL COMMISSION ON INTERRELATIONSHIPS OF SECONDARY SCHOOLS, COLLEGES AND PROFESSIONAL SCHOOLS

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INTRODUCTION

The welfare of the United States as a free society rests in large measure upon its diversified system of education, which must be responsive to changing needs while preserving fundamental values. In the deepening world tensions and the growing complexity of modern civilization, educators recognize a need to reappraise and to improve the entire system. One of the current efforts among educators to meet the challenge of the times is the Regional Commission on Interrelationships of Secondary Schools, Colleges and Professional Schools.

The Commission was established in 1958, on the initiative of Chancellor Edward H. Litchfield of the University of Pittsburgh, to attempt to coordinate the efforts being made by educational institutions in the Upper Ohio Valley Region. The Commission's members, broadly representative of the several levels of the region's educational system, shared with Chancellor Litchfield the conviction that secondary schools, liberal arts colleges and professional schools must work closely together to enable our young people to achieve their maximum self-development in a free society and acquire the highest professional or specialized competence of which each of them is capable.

The concern of the Commission is specifically with the educational experience of those young people who will or should go on from secondary school to college and professional school. The educational system, of course, has other responsibilities to other young people as well, and it faces very demanding problems in fulfilling those other responsibilities. The Commission fully acknowledges the importance of those problems, but has deliberately focused its own attention on one particular problem.

The problem is how best to provide coherent and self-consistent educational experiences for young people progressing through the secondary, collegiate and professional school levels. We have in this country a highly disorganized and uncoordinated educational system in which students are obliged to piece together their academic work, too often with great gaps in instruction and an unfortunate amount of duplication. Until we are able to achieve a greater degree of coordination between the secondary schools and the liberal arts programs on the one hand, and between the liberal arts instruction and graduate professional work on the other, we will have serious difficulty providing the individual student with a true continuum of educational experience. The Commission, therefore, seeks to develop and to implement ways of achieving more effective continuity.

The teachers, administrators and counselors of students, who are engaged in this undertaking, well know that there are in education fundamental

values which must be preserved. They also recognize, however, that education must be responsive to changing needs in a changing world. So that its panels of educators (see chart on Page 5A) will have a reliable idea of what these changing needs are, the Commission has elicited the views of the region's leaders in a wide variety of fields. The five symposium reports, to which this is an introduction, are the result.

More than four score business executives, labor leaders, government officials, attorneys, doctors, scientists, engineers, artists and other professional, civic and cultural leaders have taken part in the Symposiums. The participants were carefully chosen, through extensive consultations, to represent the most experienced and respected judgment of the community. They met, each for a full day, in five groups concerned respectively with Social Relations, Economic Affairs, Science and Technology, Health, and Culture and Values.

The Symposiums were designed to bring to bear the perspective of persons in positions of leadership on the needs of education in our times. Because change is the one certainty we can assume, the Symposium participants were asked to discuss the emerging trends and developments they considered significant for education and to consider what these suggested about the preparation today's young people should have to function effectively as social, professional and intellectual leaders of tomorrow. In effect, they were asked: What advice and guidance can you, from your diverse vantage points, give to educators who are reappraising their policies and practices to provide coherent educational experiences for those who will succeed you in the leadership of our society?

The discussions were conducted as informally as possible, so that the participants would feel free to range boldly and imaginatively in their remarks. A short briefing paper outlined the purpose of the discussion and served as an informal agenda and one of the participants acted as discussion leader, but the deliberations were "structured" just as little as seemed feasible. The Symposiums met privately, with no audience, and participants were assured that specific remarks would not be attributed to individuals in the reports.

After each of the day-long Symposiums was held, the Commission's staff prepared an abstract of what appeared to be the major points made in the discussion. The draft of this abstract then was submitted to all participants for revision and modification. Although most of the participants offered suggestions for revision and although the abstracts were modified accordingly, the abstract that appears in each report is to be considered "the sense of the meeting" rather than a formally agreed upon set of conclusions.

The Commission is impressed by the regularity with which certain matters were emphasized in one Symposium after another, despite the diverse

backgrounds of the participants discussing such varied areas as social relations, economic affairs, science and technology, health, and culture and values. Among these reiterated observations are the following.

1. An increasing proportion of our able young people should acquire *both* a broadly liberal education and specialized or professional training.
2. A young person's educational experience should continuously challenge his best efforts and should stimulate him to progress at a pace commensurate with his native ability.
3. Attributes of intellect and character which should be more vigorously cultivated among able young people include:
   a. The ability to think independently and to judge responsibly.
   b. Command of communication skills of a high order.
   c. Understanding of the scientific character of our age.
   d. Inner satisfaction in doing a task well, in pursuing excellence.

The Commission is pleased to make these Symposium reports available to teachers and administrators. The Commission members do not necessarily agree with everything reported nor do they expect that all educators will accept all suggestions made. But these reports are, as nearly as it has been possible to make them, an accurate reflection of responsible thinking in the community on the aims and objectives of education. As such, they are commended to the attention not only of the panels of educators, for whom they were produced, but of all persons interested in improving the quality of education.

The Commission members are deeply indebted to the men and women who contributed their valuable time and respected judgment to the Symposiums. The willingness of these busy people to devote an entire day to these meetings is evidence of their conviction that education can and must be made responsive to the needs of our times. Special thanks are extended to the five participants who served as Symposium discussion leaders: C. Stanton Belfour, Bela Gold, Henry S. Frank, John T. Cowles and W. George Crouch. The University of Pittsburgh has been privileged to act as host for the Symposiums.

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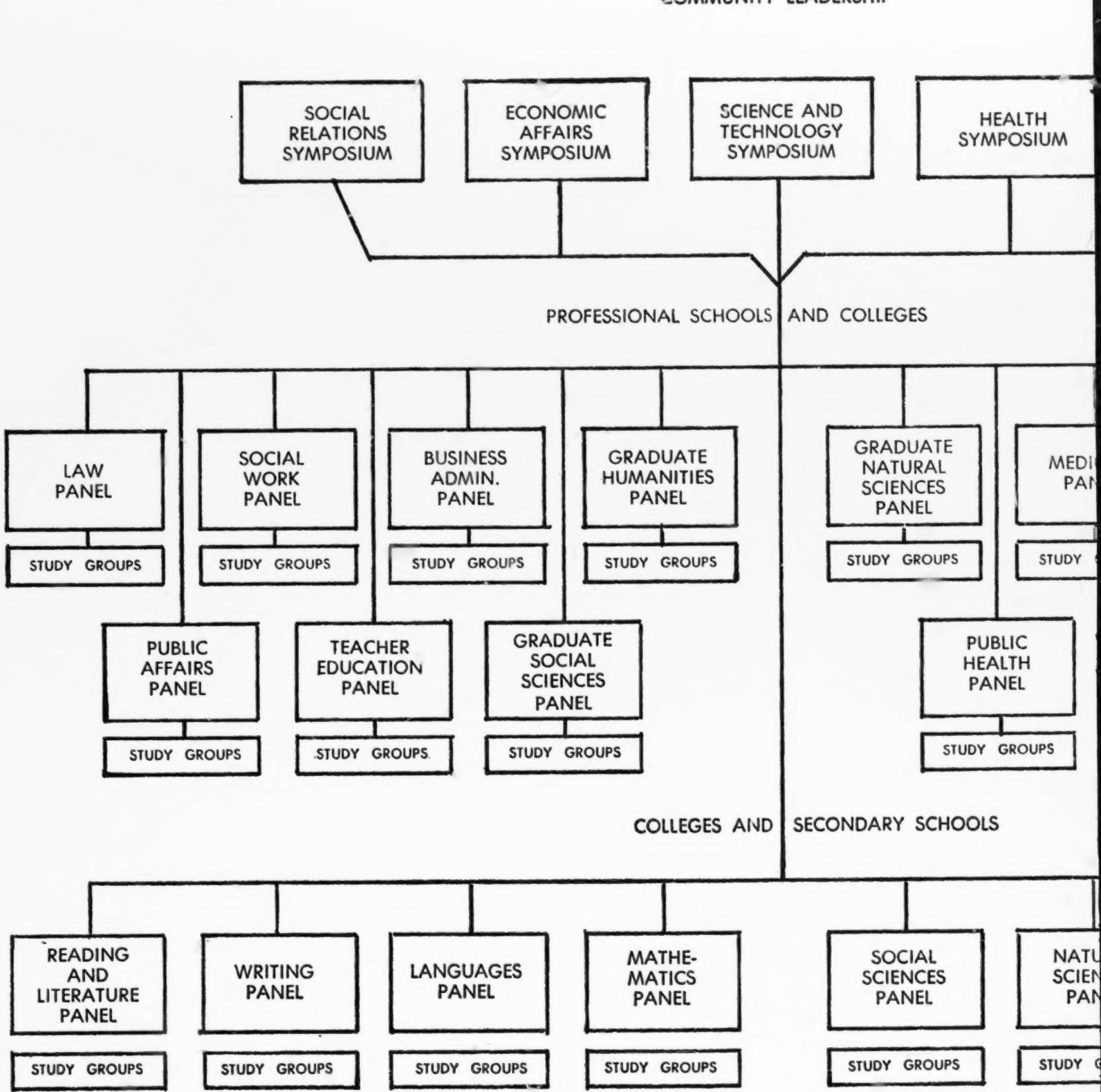

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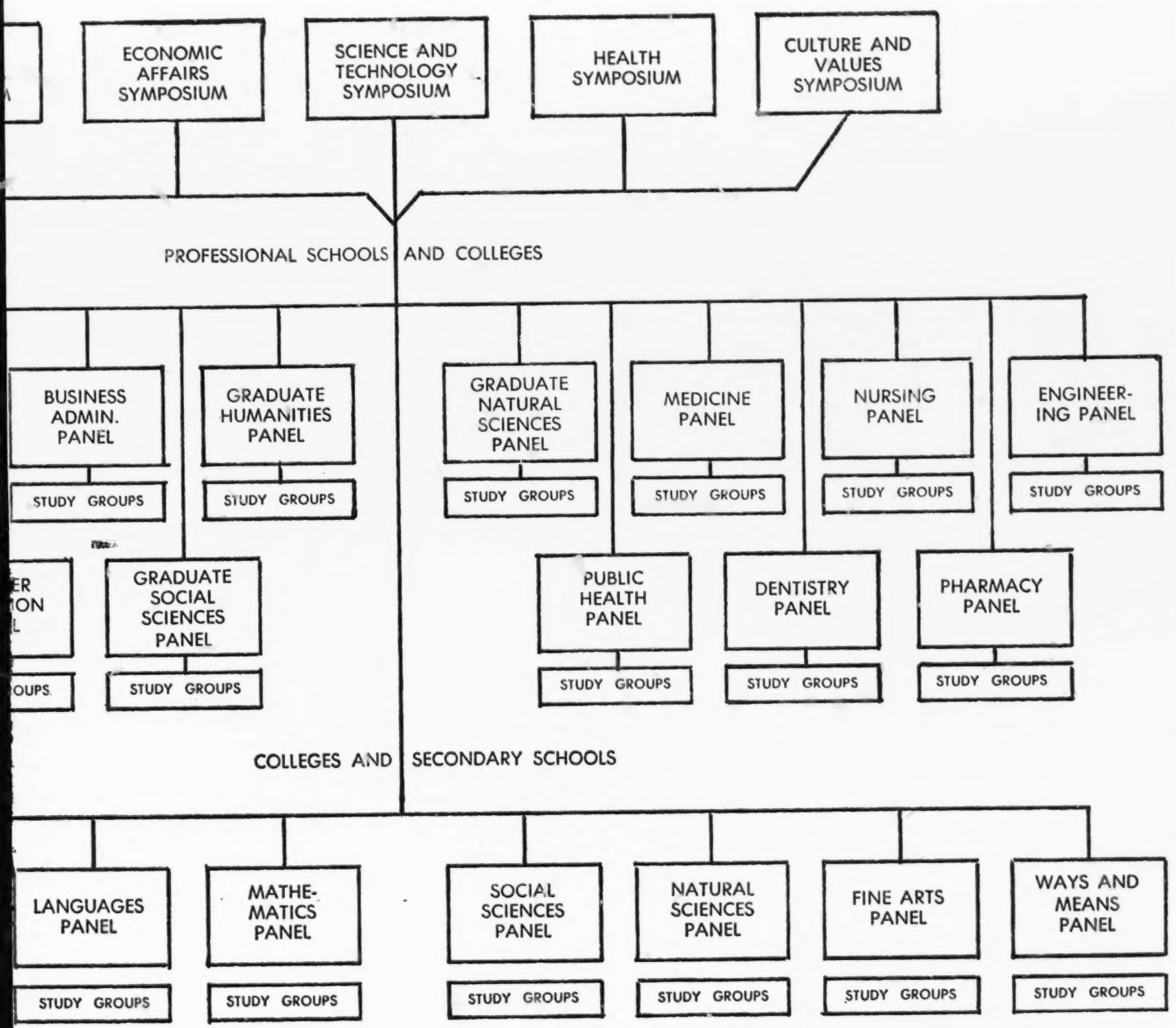

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THE SOCIAL RELATIONS SYMPOSIUM

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J. GARFIELD HOUSTON, Esquire (Blaxter, O'Neil and Houston).

ROBERT KIRKPATRICK, Esquire (Kirkpatrick, Pomeroy, Lockhart and Johnson).

JAMES W. KNOX, Controller of Allegheny County.

JOHN A. MAYER, Vice President, Mellon National Bank and Trust Company.

GEORGE P. MILLS, Director, Allegheny County Board of Assistance.

EDWARD SMUTS, President, Regional Industrial Development Corporation.

HOWARD STEWART, member of the Board of County Commissioners, Allegheny County.

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THE SOCIAL RELATIONS SYMPOSIUM

suggests that educators,
in reappraising their policies and practices,
be guided by the need to:

Develop the intellectual and moral integrity of the individual, his ability to think independently and critically about problems of society, and his recognition and acceptance of personal responsibility for value judgments.

An individual fulfills himself and realizes himself as a human being by developing intellectual and moral integrity. A person so characterized is able to think independently and critically and is ready and willing to make his own value judgments. Our society must have a liberal leavening of such persons if it is to have the vigor, wisdom and morale to confront successfully the challenges it is likely to face in the future. Individualism in this sense is essential to survival of a free society.

Our contemporary society, however, abounds in pressures to conform, not only in overt behavior but in thought and judgment. The individual is encouraged from all sides to parrot the thinking of others and to depend uncritically on the collective judgment, to accept something as right or wrong, wise or foolish, because "everybody" says so, to value what others value and to disdain what others reject. Mass media, the nebulous "they" make it all too easy for the individual to abdicate his personal responsibility to think, to judge and to decide. Making thoughtful judgments and accepting personal responsibility for the consequences of decisions are forms of maturity and of anguish.

When evasion of that anquish can be rationalized, as it is so easily can be in our society, public policies too often are not charted in any thoughtful and responsible way, but are embarked upon by following the line of immediate least resistance. A free society is adrift rather than steering a course, when the individuals in it "go along" rather than each do his own hard thinking, exercise his own anguished judgment and shoulder the responsibility for his own decisions.

This is not advocacy of rugged individualism in the sense of "every man for himself and the Devil take the hindmost," nor is it an attack on the assumptions of democracy. Rather it is a criticism of intellectual and moral slackness and a plea for emphasis on individual excellence and responsibility. The implications for the educational system are many; and some of these implications appear more explicitly in other major points developed in the Symposium's discussion.

Imbue young people with a love of learning that will continue through life to enhance their contributions to society and to enrich the increasing leisure that will be theirs.

One of the participants in this Symposium commented that an educational program is unsuccessful, no matter how much particular knowledge it stuffs into the student's head, unless it imbues the student with a love of learning. It must help motivate him to continue learning after he has left the classroom, because he will live amid changes which he must come to understand. Essential for this purpose is strong emphasis in school on individual excellence, on personal pride in and responsibility for achievement. The idea of security in the average rank is incompatible with the "self-starter" attitude required for continuing education.

As the length of the work day and work week shortens in our society, the question of how leisure time will be used grows in importance. The individual who has awakened intellectual interests will treasure the extra hours available to him, whereas another may find them a burden and a bore. Formal educational institutions will have to take this increasingly into account in the emphasis they put on awakening intellectual interests among young people and in the attention they give to adult education.

When education ceased to be the acquirement exclusively of a leisure class, the aim and character of education changed. But now as technological advances provide more leisure for everyone, the aim and character of education again must change. This is to be viewed less as a problem than as an opportunity—an opportunity to introduce more people to a richer and more satisfying life.

More of our people should acquire, among other things, a knowledge of and interest in civic activities and public affairs, so that they will become active participants in the political process and full members, in fact as well as in name, of their communities.

Enable students to understand and to express the fundamental values and philosophies that underlie our social institutions, policies and practices.

It is not enough, for the challenging times ahead, that our young people learn what are our social institutions, policies and practices. They must learn why these are what they are. They must understand the values our governmental and other institutions reflect and the philosophy of man and society from which they spring.

Indoctrination is not education, but helping young people to recognize value issues is education in a most fundamental sense. Good teaching technique can provide insight for the young person in the area of social

relations as in others, so that he learns to recognize, to understand, to analyze and to choose values.

The inability of some American prisoners of war to resist enemy indoctrination, the inarticulateness of Americans in explaining abroad the values they assume in their own government and society, and the failure of America to translate its values into terms meaningful and convincing for less prosperous, less technologically advanced peoples are matters for serious concern. Too many of us learn to recognize and appreciate only the superficial, institutional manifestations of our principles and not the principles themselves, so that we are ideological babes in the woods, not consciously aware of the fundamental philosophy upon which our free society rests, however we may assume that philosophy subconsciously.

Somehow the schools must stimulate individuals to make the very real intellectual effort required to know the foundations of their society and to make thoughtful and responsible judgments concerning them. Educators should recognize that proliferation of descriptive courses is not an adequate substitute.

Instill, especially in those educated for positions of leadership in society, an awareness of their individual responsibility for the character and quality of government, pervasive as its influence has become.

If government at each level is to function effectively, it must attract to its service qualified persons, and to do that it must have and deserve to have a higher public regard than it now enjoys in this country. Therefore, all citizens, whether or not they ever go into government service, should learn to recognize and accept their personal, individual responsibility for the character and quality of government in this representative democracy.

The crucial level of government, in many ways, is the local one. There it is that most people have direct contact with government and there they get the impressions that form their attitudes toward government generally. Our local governments, however, are poor models. The burgeoning of metropolitan areas with the flight to the suburbs means that important governmental problems and tasks no longer can be handled within the boundaries of established local governments. Yet few metropolitan area governmental institutions exist through which the new and larger communities can act. Therefore, local government loses esteem as it loses power and authority to the state and national levels.

The individual inevitably feels less personal responsibility for the more remote governments of the state and nation than he might be expected to feel for his local government. The question of how government services are to be paid for loses its immediacy and irresponsibility is encouraged.

It is not the educational system's job either to reform or to whitewash government; nor is it necessary that the teaching in schools and colleges approve or even acquiesce in the growth of government. A satisfactory education, however, should make young people aware of the pervasive influence of government in our social fabric and of their individual responsibility as citizens for its competence and effectiveness.

Prepare young people better to understand and to act among other peoples of the world, as this country's political and economic involvement abroad increases.

Even among the more highly educated people in this country, knowledge about and competence to deal with the rest of the world has been notably weak. Such knowledge and competence were not especially important during much of our history, conveniently isolated as we were, but the need for them now and in the future cannot safely be ignored. London, Moscow, Cairo, Saigon, Peiping are now to us very nearly what the next town down the pike once was.

The addition of a few foreign language courses or comparative government or cultural survey courses will not be enough. What is needed is a major change in the attitude and outlook of people in this country. The relationship of the United States, of the Atlantic community of nations, indeed of the white race to other nations and peoples of the world is undergoing such a radical change that the whole focus and orientation of education should be reexamined. This is a task the whole educational system will have to undertake, because broad public attitudes and outlook are involved.

In addition to better general public understanding of world relations, however, we will have need increasingly for people trained to operate overseas both for the government and for business enterprises. Especially challenging is the need to develop persons competent to deal with those parts of the world we have most thoroughly ignored—Asia and Africa, for instance. Not less attention to Europe and western civilization generally is called for, but more attention both to them and to the areas and cultures that have been somnolent but are now awakening.

Prepare a larger proportion of people for careers of a professional and intellectual character, as technological and organizational developments change employment patterns.

The way our society is evolving, quite clearly in the years ahead the pattern of human employment will shift more and more toward activities requiring specialized knowledge and the exercise of thought and judgment. Hewers

of wood and drawers of water probably always will be needed and routine tasks will be the lot of most. Proportionately, however, more and more persons with competence of a higher order will be needed. This is generally and readily acknowledged in those fields most obviously affected by scientific and technological advances. It is true also, though, in the social relations fields, where organizational developments have had a like effect.

One Symposium participant observed that we are living in a context of big government, big business, big labor and big agriculture. For good or ill, the size and complexity of our public and private institutions are growing. The conduct of relations among individuals, groups and organizations now calls for a sophistication and expertness unnecessary in simpler societies of the past.

Governments at all levels, being more complex organizations than before and dealing with more technical problems than before, have increasing need for highly trained administrators. So do business enterprises and even voluntary associations as they become larger and more complex. Persons with administrative or managerial skills to carry on the planning, coordinating and control functions will be increasingly in demand in a wide variety of organizations.

This suggests that the educational system should be geared to prepare an increasing proportion of people to operate at a professional level in the social relations area. The character of the professional training is the burden of the next point discussed.

Provide solid-core professional degree programs without excessive proliferation of specialties, so that practitioners are prepared to continue their own professional development according to changing needs.

Professional education in the social relations area has shown a tendency to proliferate into a multitude of narrow specialties, for substantial reasons but with some unfortunate consequences. The increasing complexity of modern civilization has made specialization necessary in this area as in others and the necessity will remain with us. However, the very fragmentation of professional knowledge and competence demands its own corrective, for uncoordinated fragments cannot make a society.

What is needed, first of all, is assurance that professional education is built upon an adequate foundation of liberal learning. The professional school graduate will be neither a good professional nor a good person, unless this is assured. Even this, however, is not enough.

Education for a profession should itself be broadly based. In a rapidly changing society such as ours, the problems to be solved and the tasks to be performed by professional persons will differ over the years. Persons professionally trained within a narrow specialty may find their competence

quickly become obsolete, they unable to grasp the larger issues and unable to contribute productively.

This of course, is not an argument against professional specialization as such. Professionals, in their work, must and will specialize as the need warrants. Professional degree programs, however, should be sufficiently basic and broad to produce practitioners capable of adapting to changing demands. A common core of administrative management competence, adaptable to government, business and other fields, would be an example. The apparent trend in law schools away from the preparation of tax lawyer, labor lawyer, etc., and back to preparation of lawyers as such would be another example.

Any professional field, if it really is one, embraces certain identifiable, fundamental knowledge and variously applicable skills and techniques. Mastery of these is what the student should get from a degree program. The purpose of a professional education is to train the individual to think through and solve problems, equipped to do so with the discipline of his profession and prepared to continue his own professional development beyond receipt of his formal degree.

Establish more clearly and consistently the relationship of educational institutions to other institutions of society and the limits of the schools' responsibility to make good the others' failings.

Schools, colleges and universities exist not in a vacuum but in a society of which they are a part and to the demands of which they must be responsive. They should respond discriminatingly, however, conscious of their own central purpose and jealous of the priority it must have on their limited resources.

Educational institutions have been too easily persuaded to try to make good the failings of other institutions of society. The family's role has weakened as urbanization progressed and the school has been asked to substitute for it in many ways. The apprentice-master relationship in the small shop has been lost in the big industrial plant and the school has been urged to step in again. But the schools cannot do all things and do them well. If they try, they will do nothing well.

The central purpose of an educational institution is to develop the mind. No other institution of society can substitute adequately for it in fulfillment of that purpose. An educational institution may share with other institutions other aims and objectives. Intellectual development, however, must be its primary concern, must have first call on its resources and must be taken care of adequately for the times to the exclusion, if necessary, or modification, as appropriate, of other aims and objectives.

Certainly the schools share with other social institutions responsibility for emotional development, for moral standards, for social adjustment, for physical well-being and for growth of the whole person. There is no subgestion intended here that these shared responsibilities be abandoned. What is suggested is that the schools recognize that they are part of a complex of social institutions, that they define and establish their relationship to the others and thus assure that their very challenging and demanding primary responsiblility receives adequate attention.

Make the most effective possible use of our educational resources and of the students' time.

The dependence of a free society upon its educational system is great at any time, but seldom if ever before in this country has that dependence been as widely and seriously acknowledged as it is now. We have been reluctant in the past, perhaps, to take education seriously and to make the hard decisions that its continued improvement requires. Recent developments have shaken our complacency and, there is reason to hope, have presented us with an opportunity.

To make the most of the opportunity, those with authority in the educational system should move vigorously to put their house in order, to do those things they long may have known should be done but for which they felt support was lacking. The time is opportune to challenge mere tradition and vested interests in the status quo, to make the most effective possible use of available human and material resources of the educational system and of the students' time, in order to meet the challenging demands that will be made upon the system.

The attraction and training of more high quality teaching personnel is essential. Our knowledge of the learning process and of appropriate teaching techniques has improved markedly. It should be remembered, however, that the teacher is not only a dispenser of particular knowledge but is also a model for the students. Therefore, the teacher, at whatever level of the educational continuum, should be the sort of educated person upon whom we would want our young people to model themselves. Any teacher should be a liberally learned person as well as a master of the techniques of the teaching profession.

The schools, colleges and universities should coordinate their efforts in order to minimize duplication. There will be more than enough for all to do, if each educational institution does what it can do best and avoids trying to do ineffectively what other educational institutions can do better.

A matter of serious concern for educators is the length of time required to complete a liberal-professional education. Individuals differ in their

rate of maturation and in the pace at which they can learn. To whatever extent it is feasible, the educational program should be geared to the individual's capacity to progress. Among other things, this means more effective counseling of students. Early admissions, advance placement and other similar programs should be made available, where appropriate. Whether law schools should and engineering schools should not require four years of liberal arts college before admission, whether the Ph.D. program should be indeterminate as it is—these and others like them are questions for educators to decide, but at least they should be considered in the light of the need to conserve the students' time.

THE ECONOMIC AFFAIRS SYMPOSIUM

Roster of Participants

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THE ECONOMIC AFFAIRS SYMPOSIUM

suggests that educators,
in reappraising their policies and practices,
be guided by the need to:

Instill in all a high regard for individual excellence, for achievement, for effort and efficiency and for personal responsibility.

Our schools, colleges and universities have an obligation to help instill values and shape attitudes as well as transmit knowledge and develop skills. The obligation is not that of the educational system alone. First the family and later other institutions of society have their influence upon the individual's values and attitudes, but a person's formal educational experience powerfully affects the regard he will have as an adult for individual excellence, for achievement, for effort and efficiency and for personal responsibility. A high regard for these values and attitudes among all our people is essential for the continued prosperity and perhaps the survival of our society.

This country long has enjoyed a high standard of living and a rapid rate of material progress. Our success in this respect can be attributed in part, at least, to the bounty of nature and to fortunate circumstances. We have had great natural resources at our disposal, an extensive domestic market, an advanced Western European culture and technology to draw upon and relatively peaceful opportunity to exploit our advantages. In addition, however, we have had among our people a vigor and drive, an individualistic sense of personal responsibility for achievement. These, too, contributed to our success and development.

This country now faces a serious challenge in the form of economic warfare by a powerful opponent who considers our economy our weakest point. For the longer run, we face the awakening of long suppressed peoples of the world who will be striving mightily to better their material lot. We may be an *Affluent Society*, as one economist has called us, but we must not make the same mistake that other affluent societies before us have made. We cannot afford, challenged as we are, to relax the vigor of our efforts, to tolerate inefficiency, to grow slack and sloppy in performance.

Our people generally must understand that "there is no free lunch." The educational experience must contribute to this understanding, not simply by preaching but by practice, as demanded of young people in schools, colleges and universities. The student must learn from experience that there is no security in the average, that it makes a difference whether he makes an A or a gentleman's C, that individual excellence has its reward and that achievement is one's personal responsibility. This is not entirely

a matter of requiring hard work but involves helping the individual identify goals that will challenge his interest and stimulate his effort. The person who knows and is able but does not perform neither fulfills himself nor fully serves his society. For the individual's self-realization as much as for the welfare of our society, the educational system must be concerned with the awareness of values and the development of attitudes.

Give everyone, in this representative democracy, a sound understanding of the way our economic system works, of its underlying values and of its relationship to government and to the individual.

The individual must be able to earn a living, but he must be able to do more than that if our society's economic system, in a representative democracy, is to provide him the opportunity to earn his living. Not only must he develop some skill, talent or knowledge which can be employed, but he must develop competence as a citizen to share in shaping public policy in regard to the economic system. In a representative democracy, he will share in it; he should be able to do so wisely and responsibly.

What everyone needs to know about our economic system is difficult enough to determine, but how the knowledge is to be acquired is even more difficult to decide. The task of this Symposium has been to shed some light on the former as a help to educators who must work out the latter. This much guidance can be offered: Something more than a descriptive acquaintance with economic institutions is needed.

Every educated person should be aware of the values that underly and have shaped the character of our economic system. He should have some conception of the principles which economic institutions and practices reflect. The degree of sophistication of understanding that can be achieved will differ, of course, according to the level of education. The point is, however, that everyone should be aware at least that values do underly our institutions and that an understanding of them is to be sought.

The educational experience of everyone also should afford an understanding of how our economic system works and how it is related to government and to the individual. Whether this requires specific courses in economics or whether the requisite understanding can be achieved best through history and other social studies is a question for educators at the various levels.

Among those educated for positions of leadership in society, their general education should include a knowledge of economic principles, whatever their special field of learning or professional competence may be.

Develop interests that will enable individuals to make more satisfying use of the increased leisure provided by our economic system.

Technological advances and social custom are shortening the work day and work week and, together with the increasing life span, are providing a longer retirement period. To recognize these developments does not necessarily imply endorsement of a slackening of effort over the challenging years ahead. It does suggest that, if more leisure is to be available, people be prepared to make as satisfying use of it as possible. Leisure can be a burden or an opportunity for the individual, depending upon the inner resources he has developed to use it.

The educational system, as much as anything else in our society, will determine how much satisfaction is to be derived from the increased leisure. Interests awakened in school and the intellectual tools acquired there to pursue those interests can equip a person to continue his personal development and fulfillment throughout life. That education have a continuing effect is desirable not so much because it may further the person's career or increase his earning power but rather because it will enable him to realize more fully his potentiality as a whole person, as a man.

If education is to do this, it must be concerned with the individual's development not only as a prospective worker or professional business executive but as a well rounded person. This suggests that a broad liberal education is appropriate and worthwhile for anyone. The pensioned mill hand and the retired executive, the 40-hour-a-week office worker and the suburban housewife will benefit from it. A liberalizing education, whatever else may be said in this report, is here recognized as good for all because of the personal satisfaction it can mean for the individual.

Prepare a larger proportion of people for professional-level careers as the economy grows in complexity and as mechanization and automation reduce reliance on physical components of human capacities.

Commerce and industry employ in their work force ever larger proportions of engineers, accountants and other professional-level personnel. What machines and electronic devices can do better or more economically will be done increasingly by them rather than by human hands and backs. There will continue, of course, to be need for great numbers of workers below the professional level. Some of the work of mankind will be done by hand labor, some by men performing routine machine operations and an increasing amount by highly skilled but non-professional technicians. But the numbers of professional-level persons needed is increasing disproportionately. Clearly the pattern of human input is changing and the educational system should adapt to the direction of change.

More young people will have to be given not only what has been the common schooling and not only a liberal education but basic professional training as well. The other levels of the educational system, the secondary schools and colleges, should recognize that more of their students will be going on to professional schools and should adapt their work accordingly. For persons heading for professional training, vocationally oriented learning in school and college is less valuable than emphasis on fundamental learning skills and breadth of knowledge as a firm base for later specialization.

The large numbers of young people who will end their formal education with secondary schooling should be prepared to become productive members of society. What is now commonly known as vocational education need not be abandoned entirely, although employers in this Symposium indicated they preferred competence in reading, writing and arithmetic in young job applicants to any routine skills which could be taught in schools. The point is that proportionately more young people in high school should be prepared to continue formal education. And in the colleges, proportionately more people should be prepared to go on to professional schools.

This is a matter of emphasis, of assignment of educational resources, so that the increasing need for professional persons can be met most effectively. A high school has no business giving a wood shop course and a liberal arts college has no business giving an office procedures course to a person going on to business administration school. They have more important contributions to make to him in the limited time available. And this will require close cooperation among the secondary schools, colleges and professional schools to develop educational programs for young people progressing through the continuum.

Develop in people heading for management careers competence in logical thought and therefore in problem solving, skill in communication and adaptability to new ideas and new situations.

In a complex civilization such as ours, in an economy based on rapidly advancing science and technology, in a society with constantly evolving institutional and organizational patterns, the specific knowledge and skills required for the management of affairs is always changing. A person truly prepared for a career in management must be, above all, adaptable to new situations and receptive to new ideas. He must have the intellectual discipline to confront and to think through problems even of an unfamiliar sort, to comprehend and evaluate new information and to communicate clearly and accurately with other persons.

Competence in logical thought processes is perhaps the basic ingredient of this recipe. Therefore, the educational experience of a person heading

for a career in management should develop such competence. A rigorous liberal education, as we ordinarily understand the term, is intended to do just that and, consequently, is the most practical sort of preparation for later specialization in management training. It must, however, be rigorous; that is, it must exercise the mind and not simply stuff the memory.

All that has been said applies as well to management in government, civic affairs and other fields as it does to management in business. Indeed, these are abilities needed by anyone who is to make decisions. They are abilities which take time to develop in an individual, so that pre-professional education must get their development well under way. And professional training for management careers should sharpen these abilities by calling upon their use in the special context of business, government or other problems.

While special knowledge and special skills are needed by the management career man, the character of the ones needed will change during a career. Intellectual discipline will equip him to respond to the changing needs.

In professional training for business management, emphasize competence in those administrative skills common not only to diverse business but to governmental and other institutions.

Economic enterprises require the services of diverse professional specialists. By and large, these specialists are prepared to perform their particular functions adequately. The business executives participating in this Symposium found little to criticize in accountants as accountants, in engineers as engineers or in other specialists as specialists. The problem, as they saw it, is to find among these specialized professionals persons who can coordinate and integrate the various elements of the whole enterprise.

Schools of business administration appear to differ among themselves as to what kinds of competence they are trying to develop. Some, probably the majority, are training specialized professionals, while others are trying to develop what might be called business administration generalists. The former are answering to specific job needs at the lower administrative levels. The latter focus on the needs of careers projected to the higher levels of management. Probably both have a place in the educational system.

The larger and more complex our economic enterprises become, however, the more pressing becomes the demand for persons capable of coordinating the specialists. The demand can be met in part, perhaps, by training business administration generalists. It is possible to distinguish a common core of administrative knowledge and competence which is widely adaptable to various positions in diverse businesses and even to other fields in which there are large organizations. Relatively few persons, however, can be

reliably identified as top-level management prospects and trained specifically for that level where the coordinating skill is especially needed. The larger number probably will continue to be drawn from among the professional specialists. Therefore, the specialized professional programs of education for business careers should include a core of general administrative management.

To put it another way, the professional, in this as in other fields, should be more than a narrow specialist. Both his general education and the breadth of his specialized professional training should be such as to enable him to grow and progress in his career.

Prepare more young people to conduct competently economic affairs abroad with knowledge of foreign languages, customs and cultures.

There is no need to belabor the point that this country's economic relations aboard are increasing and are spreading to ever more parts of the world. Apparently, however, there is need to underscore what this should mean for our educational system. It means, first, that more Americans are going to go abroad to conduct business and, second, that those who direct business from this country are going to have to know a lot more about other peoples of the world. Therefore, it means that our educational system should devote more attention than perhaps was necessary in the past to foreign languages, customs and cultures.

An American is admittedly at a disadvantage in acquiring competence in foreign languages, because he finds little opportunity to practice them, unlike a European who may use three languages in the course of an ordinary day. Secondary school language instruction may be quite competent and yet real command of a language lost for lack of opportunity to use it. The opportunities are increasing, however, as Americans travel abroad more, as our schools attract more foreign students and as overseas work assignments increase. Perhaps the time has come to put more emphasis on foreign languages in our elementary and secondary schools.

Also needed is more knowledge about and understanding of other peoples' customs and cultures, including their economic systems and practices. Foreign people resent our apparent unwillingness to take the trouble to learn their ways and not only our diplomatic but our economic affairs have suffered as a consequence. Increasingly those in positions of leadership in business in this country are going to find need for a knowledge of foreign affairs.

Encourage venture spirit, originality and risk-taking initiative rather than force into a rigid mold all those heading for careers in business.

The proportion of business managerial positions filled by persons with extensive formal education is increasing, so that the impress of higher education on the character of business leadership becomes more marked. Coincidentally there have developed the images of "The Organization Man" and "The Man in the Gray Flannel Suit" to caricature the conformist aspiring man of business. Coincidentally, it is to be hoped.

Our still largely free enterprise economic system depends for its vitality and continued progress on the venture spirit. Originality and risk-taking initiative are still the source of our most significant economic advances. Not only as individual entrepreneurs but as a leaven among the large corporations' staffs, there is need for the often irritating and troublesome individual who is not satisfied with the answers and must try new ways.

Educational institutions preparing people for business leadership should encourage the venture spirit. They should take care, first, that their formal requirements are not so rigid as to close, for the unorthodox and nonconformist talent, the increasingly important avenue to positions of leadership in business which they constitute. But beyond that precaution, they should seek out and cultivate the constructively critical attitude. This is much more difficult to do than to impart economic dogma, but unless it is done the professionalizing of business management may have a stultifying effect on economic enterprise.

Improve the opportunities for young people of ability to get higher education by reducing the time required and affording better guidance and counseling.

Lockstep progression through the educational continuum is a serious deterrent to achieving the sort of objectives that have been suggested. The standard time requirements of each level of education handicap especially those young people of ability who should be encouraged to go on through college and professional school. They are more likely to continue their educations to higher levels if they are constantly challenged and if they are permitted to progress as rapidly as they individually are able to go. Our commendable efforts to give everyone secondary schooling should not be permitted to hold back and perhaps discourage young people capable of using the time to reach professional levels of competence.

The potential professional person's educational program should not be burdened with vocationally oriented courses, either in high school or college, even though such courses may be appropriate for others who are not going on. His program should be tailored to his needs, to giving him

the learning skills and the breadth of knowledge upon which professional training must be based. Acceleration, early admission to college, advance placement or other methods of moving him along as rapidly as he is capable of going should be employed, with due regard for maturation. College programs should be sufficiently flexible and professional school admission requirements should be sufficiently realistic to start professional training as soon as a person is prepared to handle it.

This is not a plea for a general speedup of education, nor is it a scheme to handle the increasing numbers of students by rushing each of them through school more quickly. Any such steps as are suggested here should be taken with discrimination. More extensive and intensive counseling of students is necessary if we are to do the best possible job with and for the able youngster, while at the same time we provide universal education. Improvement of counseling and career guidance is requisite for effective employment of our educational resources and full development of our people's intellectual resources.

THE SCIENCE AND TECHNOLOGY SYMPOSIUM

Roster of Participants

PAUL BACHMAN, Vice President, Koppers Company.

A. W. BEATTIE, Superintendent of Schools, Allegheny County.

R. L. BROWN, Professor of Physics, Allegheny College.

RALPH ELY, Vice President, Nuclear Science and Engineering Company.

AIKEN W. FISHER, President, Fisher Scientific Company.

G. RAYMOND FITTERER, Dean, Schools of Engineering and Mines, University of Pittsburgh.

HENRY S. FRANK, Chairman of the Department of Chemistry, University of Pittsburgh.

J. A. HUTCHESON, Vice President, Westinghouse Electric Corporation.

M. W. LIGHTNER, Vice President, United States Steel Corporation.

ROBERT M. MORGAN, Head of Bureau of Measurement and Guidance, Carnegie Institute of Technology.

R. J. S. PIGOTT, former Chief of Engineering, Gulf Oil Company.

C. L. RUMBERGER, Vice President, H. J. Heinz Company.

EARLE P. SHOUB, Regional Director, U. S. Bureau of Mines.

C. V. STARRETT, Associate Director, Buhl Foundation.

E. K. WALLACE, Professor of Chemistry, Chatham College.

J. C. WARNER, President, Carnegie Institute of Technology.

BLAINE B. WESTCOTT, Vice President, Gulf Research and Development Company.

THE SCIENCE AND TECHNOLOGY SYMPOSIUM

suggests that educators,

in reappraising their policies and practices,

be guided by the need to:

Develop in persons preparing for careers in science and engineering a clear sense of values and an understanding of the humane, social implications and responsibilities of their work, so that they can share more intelligently in determining the ends their specialized training is to serve.

Much of the criticism of scientists and engineers as aloof from and thoughtless of social problems and humane values is and perhaps always has been false. The fact is, however, that the activities of scientists and engineers have an increasingly pervasive influence upon all aspects of human affairs, so that those responsible for preparing professionals in these fields must strive constantly to improve their social and humanistic awareness and competence.

Today all engineering schools are required by the accrediting body to include a minimum of 20 per cent liberal arts, humanities and social studies, in their curricula. Engineering schools have been reviewing their own programs in recent years and have been, as one participant puts it, "under the hammer." Their serious reappraisal of their own work leads them to suggest that the liberal arts schools do the same, in order to assure that the liberal learning infused into the engineering student's program be as solid and as meaningful as the other professional content. One of the greatest values of science study, including that in engineering, is the rigorous intellectual discipline it encourages. The humanistic and social studies of students preparing for careers in science and engineering should reenforce rather than weaken the rigor of that discipline.

Because scientific research is so influential in shaping the character of our society and culture, the research scientist bears a special responsibility in relation to his fellow men. Many of the great public decisions of the future will involve judgment of complex scientific developments and the general public will look for guidance to those especially knowledgeable about such matters. Although the research scientist may pursue knowledge for the sake of knowledge, he cannot in good conscience ignore the humane, social implications of his work or avoid responsibility for sharing in the process of public policy making. His education, therefore, should instill in him a clear awareness of value issues.

Emphasize, especially in undergraduate science and engineering education, knowledge of fundamental principles of science and the ability to analyze problems, so that the graduate is prepared to continue learning throughout his career.

The rapid rate of new discoveries in science and new developments in technology makes it more important than ever that people preparing for careers in these fields acquire during their formal undergraduate education the ability to carry on their self-education thereafter. The proliferation of scientific information has made it utterly impossible to acquaint the student with all that is known now in his field, let alone to anticipate what new knowledge will become available during his career. Trite as this may seem, it bears repeating because, although generally acknowledged, it is not always reflected in the content and method of science and engineering education.

Engineering schools, as a result of the reappraisal they have been undergoing in recent years, have pretty much reversed the trend toward narrow specialization in their baccalaureate programs. One of the educators participating in the Symposium observed that there is less and less difference in the preparation given the physicist and the mechanical engineer, and the industrial technologists heartily approved. The latter, however, were not fully satisfied with the results they saw in the young men coming to industry.

The objectives of science and engineering education must include: Provision of a firm grounding in the fundamental principles of science, which can be comprehended in a formal educational program of reasonable duration and with which the graduate is equipped to acquire the specialized information he may come to need in his career; and development of the ability to think through problems many of which are not yet even recognized as such and for which the answers therefore cannot possibly be taught him.

Recognizing these two prime objectives, of course, does not rule out the further one of providing the young engineer or scientist with practical knowledge and competence for which he will find immediate application. The point is that the formal undergraduate training must do more than prepare the young person for his first job. It must do that, but it must do more, for this concerns the preparation not of technicians but of professional practitioners in rapidly changing fields. The industrial technologists and research directors conceded that employment practices do not always encourage this kind of preparation, that instead they sometimes encourage specialized preparation for specific job demands. In effect, they were urging the universities and colleges to resist the pressure in this direction.

Develop in future scientists and technologists, as a recognized part of their professional equipment, the ability to read with comprehension and to write and speak with accuracy, clarity and force.

Participants in the Science and Technology Symposium apparently intended to do more than endorse the general appeal for better reading and writing skills for all. They recognized particular problems in the fields of science and technology which make such skills especially important for people preparing for careers in these fields.

The aspiring scientist must be able to keep abreast of a flood of scientific literature in his own and related fields. To do so he must be able to read both with facility and with real comprehension. The sort of reading skill needed is closely linked with reasoning ability. Even if an individual's general education has produced reading skill ordinarily adequate for most purposes, his skill should be sharpened in the course of his professional training to meet the special demands of his work. The volume of scientific literature and the complex character of it combine to produce a rigorous challenge to the most highly developed reading skill and comprehension.

The scientist or engineer also must be able to express himself to others with accuracy and clarity. He must cummunicate with his professional colleagues not only through the standardized symbols of science and teachnology but in terms that can express objectives and purposes for which there are no ready symbols. Furthermore, in an age in which science and technology intimately affect the lives of all in a multitude of ways, he must be able to explain the implications of his work to non-scientists, to business executives, to government officials, to the public at large. Scientific career men often complain of the lack of public understanding and consequent inadequate support of their work and of the distorted impressions created by non-scientist expositors and interpretors. At least part of the trouble is the failure of scientists themselves to translate their ideas clearly and accurately into terms comprehensible to non-scientists.

Americans generally, and American scientists among them, have been weak in foreign languages as compared with Europeans. The need now for command of foreign languages in order to keep abreast of scientific developments abroad is widely recognized by scientists, but what can be done about it at the college and university levels is limited by what is or is not done at the elementary and secondary levels. Language proficiency should be cultivated early, at least among the most able youngsters, so that they can more readily acquire such foreign languages as their later advanced studies make important to them.

Recognize that the university's distinctive functions are fundamental research and teaching, while industry has principal responsibility for applied research and development.

The role of scientific research has gained unprecedented recognition in industry and the amount of research, fundamental as well as applied, that is being supported by industry is impressive. Much is being done by the various industries in their own laboratories and much, too, of what is being done in the universities is being financed by grants from industry. All this is good, of course, because there is no question of too much research. The question is whether the finite human and material resources available for scientific research are deployed in the most effective manner.

Research conducted by industry in its own laboratories usually is under economic pressure to produce practical results pretty much on schedule. For applied research and development, the competitive pressure for results may have favorable effects, but it works against fundamental or pure research which must not be called upon to produce practical results, let alone to do so on schedule. When industry, through grants for specified projects, supports scientific research in universities, pressure for short-run, practical results is exerted there, too. The research personnel and facilities of the universities are diverted into lines of research that can attract grants because they promise results and away from lines of research which can promise nothing but which open the possibility of major, fundamental advances in human knowledge.

The Symposium participants, many of them industrial research and development directors, were generally agreed that industry should support with unrestricted grants to universities the basic research which no individual company or even industry could justify economically for itself but which all recognized they might wish, 20 years hence, had been done by someone. The universities, however, also have an obligation and that is to resist the temptation to direct their research efforts into whatever lines are most easily financed.

For industry and government to engage in fundamental research is quite proper. There is no suggestion intended that the universities monopolize that sort of work. Rather the point is that industry and government can be expected to shoulder the responsibility for most applied research and development, while fundamental research may be neglected unless the universities do it, as they traditionally have done.

Acknowledge full partnership of the natural sciences among the liberal arts, so that all persons prepared for leadership in our society will appreciate the scientific and technological character of much of their environment.

In this scientific age, science should be considered a cultural subject, without some knowledge of which no one can be considered liberally educated. If we believe that an engineer should know something about Beethoven's Fifth, we should expect with at least as good reason that a liberal arts graduate know something about Rutherford's proof that atoms have nuclei. Science has been intellectually liberating and deserves a place among the liberal arts.

Originally, the justification for science study was humanistic and only relatively recently has come to be based almost exclusively on materialistic grounds. The change is unfortunate to the extent that it consigns scientific knowledge only to those who employ it directly in their professional life, to scientists, engineers, physicians and the like, and permits leaders in social and humane fields to profess unabashedly their ignorance of science. There are eminently practical reasons why the attorney and the salesman, the government official and creative artist should understand the implications of science for their work, but vocational application or use of science is only one reason for its study.

The natural sciences, as intellectual disciplines, have given mankind greater understanding and control of nature, from the nucleus to the cosmos, from the ocean depths to outer space. And from the sciences has developed a complex technology that has radically altered economic and social institutions and relationships and has created a scientific, technological culture. To profess really to understand our society or our culture without a knowledge of science is absurd. Therefore, all, and especially those prepared for positions of leadership in society, should have as part of their liberal education a firm grounding in the principles of science.

The engineering schools and scientific institutions, preparing people for careers in technology and science, cannot do this job. The liberal arts colleges and the secondary schools must do it. And it will be done only if the natural sciences are recognized to be among the liberal arts, just as literature, languages and history are.

Provide, in the educational progression, a continuing challenge and stimulation for the most alert and probing scientifically-inclined minds from the earliest age at which it is possible to identify them and move them along at a pace commensurate with their natural ability.

The vigorous curiosity characteristic of children is a tremendous asset with

which we start the enterprise of developing fine minds. That natural curiosity should be given every opportunity and encouragement to carry the young person as far as he can go intellectually as rapidly as his balanced maturation permits. Unfortunately, the educational system does not always work in that direction, especially for the highly talented youngster. The rigidities of the system too often discourage the very youngsters with the greatest potential.

Techniques for identifying high general intellectual ability and special aptitudes are improving. Full use should be made of them at as early ages as feasible. Young people with special aptitude for science, when identified as such, should be given the opportunity to cultivate that talent from the lower grades on. Delay in providing the opportunity can destroy interest and motivation and cause the aptitude or talent to deteriorate. Because identification techniques are not entirely reliable, the same opportunity should be available to all youngsters, not the same treatment but the same opportunity, so that inherent interest and ability can make their existence known.

The important thing is to provide a continuing challenge and stimulation for all mental ability levels including the highest. Whether enrichment programs or acceleration programs are the better method is for the educators to determine for each individual. How practical are early admission plans and advance standing programs also is in their province. The point the Symposium participants stressed was that the able youngster with good aptitude for science and mathematics should be encouraged to progress as rapidly as he is capable of doing in those fields. Not only will this preserve his interest and motivation and maintain the vigor of his mental abilities, but in the field of science at least there is so much to be learned that no opportunity should be lost to speed its acquisition.

The time normally required for a basic scientific education plus specialization already is so great as to constitute a serious problem. The length of the individual's productive career is shortened and it is shortened by those early years which so often are most productive of really original new ideas and discoveries. The more able the student the more likely he is to qualify for time-consuming higher education and the more important it is, therefore, that any time that can be saved in his early schooling be saved.

Define more clearly what the liberal arts colleges and the professional schools want the secondary schools to provide in the way of science and mathematics preparation, so that remedial work and duplication of instruction may be minimized.

As public school districts are consolidated in this region, the larger and

better supported high schools become capable of providing improved college preparatory programs. Teachers can specialize in a single subject and teach that one better. Students can be grouped by ability levels and by particular aptitudes. Differentiation between college preparatory and terminal education programs can be made. Better equipped laboratories can be maintained. The consolidation of high schools which makes all this possible is to be encouraged as a means of improving the quality of secondary education, whatever financial or other justification there also may be for it.

Although an opportunity for better college preparation is developing in the public comprehensive high school, the colleges cannot assume that the opportunity will be exploited fully unless they, too, make an effort. Secondary school people quite generally complain that the liberal arts colleges and undergraduate professional schools have not made clear what they want the students to get in secondary school. In times past, the colleges set rather rigid entrance requirements and the secondary schools of necessity complied, but the conditions that forced their compliance no longer pertain. The answers now must be sought through collaboration of the colleges and secondary schools.

In this Symposium, the particular questions raised were whether the high schools should offer calculus and analytical geometry to able students or provide more algebra, whether chemistry and physics should be offered first in the 10th grade and, if so, what science should be added in the senior year. The questions were raised but no consensus developed on the answers, indicating that educators have a job to do in this area.

On two matters there was substantial agreement: That the colleges and universities should enforce quality standards of science and math preparatory work through their admissions policies and resistance to doing remedial work in college; and that secondary school science instruction should emphasize fundamental principles and analytical ability rather than extensive descriptive material.

Provide for the training of adequate numbers of supporting technicians, so that professional talent in science and engineering can be employed to maximum advantage.

Strenuous efforts will be required to prepare enough scientists and engineers to meet our society's future needs. Once developed and trained, this professional-level competence will have to be employed as effectively as possible, which means at professional-level activities. We will not be able to afford the employment of highly trained scientists and engineers at tasks which can be performed by technicians. Therefore, adequate numbers of

supporting technicians will have to be trained to permit the most effective use of professional talent.

Training of technicians, of course, is not directly involved in the secondary school-college-professional school continuum, with which these Symposiums are concerned. However, because the supply of technicians is related to effective use of professional trained talent, institutions of higher education are indirectly involved. The conduct of adequate technician-training programs will require close collaboration by professional schools, scientific research agencies and industry with the institutions that provide the training. The universities, as a part of their responsibility to the professions, must provide counsel and help to those who train the supporting technicians.

It is clear that vocational high schools that become dumping grounds for the poorest students cannot produce the sort of technicians who will be needed. The technical training must be demanding and the students must be selected on the basis of their aptitude for it. The programs must be such as to develop technical competence of a fairly broad and adaptable character, basic skills, attitudes and work practices. Because of the rapid rate of change in the fields of science and technology, the very specific operations can best be learned on the job.

Competent technicians can be developed only if apt trainees are selected and appropriate programs provided. University professional schools can and should help especially in regard to programs. Educators generally can help by recognizing that manual or technical aptitude is different from academic aptitude rather than an inferior quality of the same thing.

THE HEALTH SYMPOSIUM

Roster of Participants

PHILIP BROUGHTON, Secretary, A. W. Mellon Charitable and Educational Trust.

DR. JOHN T. COWLES, Professor of Psychology, School of Medicine, University of Pittsburgh.

DR. T. S. DANOWSKI, Renziehausen Professor of Research, School of Medicine, University of Pittsburgh.

MRS. ALICE K. DEBENNEVILLE, Executive Director, Visiting Nurse Association of Allegheny County.

DR. MURRAY FERDERBER, Head of Department of Physical Medicine, Presbyterian Hospital.

DR. WILLIAM F. FINZER, Director, Child Guidance Center.

GEORGE L. FOLLANSBEE, President, Shady Side Academy.

DR. VICTOR J. FREEMAN, Associate Professor of Public Health, University of Pittsburgh.

ALVIN R. GUYLER, Regional Manager, U. S. Veterans Administration.

DR. EDMUND MCCLUSKEY, Vice Chancellor—Health Professions, University of Pittsburgh.

DR. CAMPBELL MOSES, JR., Director, Addison H. Gibson Laboratory.

DR. ROBERT O'CONNOR, Medical Director, United States Steel Corporation.

CARL OLSON, Head of Department of Physical Education, Men's Division, University of Pittsburgh.

WALTER ROME, Executive Director, Children's Hospital.

DR. LEO P. SHEEDY, Past President, Allegheny County Medical Society.

DR. ISAAC SISSMAN, Immediate Past President, Pennsylvania Dental Association.

THE HEALTH SYMPOSIUM

suggests that educators,
in reappraising their policies and practices,
be guided by the need to:

Give people headed for careers in the health professions a sound knowledge of and competence in social and economic affairs.

Practitioners of the health professions these days have need for greater social awareness for several reasons related more or less directly to their professional duties. Especially significant for the preparation of future practitioners is the changing relationship between the health professions, particularly the medical profession, and public and semi-public authorities.

The fact appears to be that the future of the health professions will be shaped not exclusively by the professionals and their associations, as was largely the case in the past, but also and increasingly so by governments, corporations, unions and other organizations or institutions through which various segments of the public operate. Public consensus appears to be developing on the idea of assuring full health protection for everyone in one way or another. The old one-to-one relationship, as between doctor and patient for instance, is giving way to other relationships involving various social institutions. The future practitioner, therefore, will need competence in social and economic affairs for specifically professional reasons, in addition to the reason that he is a citizen as well as a professional practitioner.

The evidence of these changing relationships for the health profession practitioner is unmistakable. Proposals for government programs of health insurance are only a part of it. Other unions are following the trail blazed by the United Mine Workers and corporate employers are putting forth their own plans for health insurance. Congress is showing active interest in regulating private health and hospital insurance rates. Members of the medica' and other health professions may disapprove some or all of these developments, but they must acknowledge that the non-professional public is going to have a hand in shaping these trends and that the professionals, therefore, must be prepared to work with and through public and semi-public institutions and organizations as well as their own professional associations.

Health professions schools should take this into account in at least two ways. In their admissions practices they should live up to the commonly stated admissions policy of requiring a truly board, liberal education of all applicants and, in this way, assure that the entering professional school

student already has a sound base of social science. Too often the professional school pays lip service to liberal arts preparation but, in practice, selects students who have concentrated in natural sciences and mathematics at the expense of the social sciences and humanities. But, even from the strictly professional point of view, the health profession practitioner is going to need knowledge of and competence in social and economic affairs. The professional school should see to it that its students bring with them a good basic knowledge of those areas as well as of natural sciences.

In addition, the professional school's own program should acquaint the student with the particular social and economic factors which are of special concern to the health professions. The physician, for instance, although basically a scientist, is also to an extent a businessman and often an administrator as well. He almost certainly will have to deal professionally with governments and other social institutions, as mentioned above. For all these reasons, the professional training as well as the pre-professional liberal education of future health profession practitioners should develop proficiency in social and economic affairs.

Reorient education for the health professions along more broadly environmental lines, in recognition of the fact that emphasis in practice has been shifting from cure and care to prevention and protection.

Formal education for the practice of medicine and some of the other health professions has been long established. The scope and pattern of that education, not surprisingly, tend to be pretty well set and somewhat unresponsive to changing social needs and even to advances in the scientific knowledge upon which the professions rest. But no professional education, certainly not one based on science, can stand still in this changing world. Schools of the health professions are or should be in the process of a rather radical reorientation of their programs to adapt to changes evident in the practice of these professions.

The effect of environmental conditions on health is getting increased attention in practice. Such things as housing, traffic congestion, industrial air pollution, on-the-job tensions, stress and strain in the family may be highly relevant in handling individual health problems. The well trained health profession practitioner should know how people live; for, as one participant in this Symposium puts it, the physician's concern is not bounded by the patient's skin.

Furthermore, as the scientific base of the health professions develops, one disease or malady after another is brought under control to the extent that the task is no longer so much to cure and care for those who are stricken as it is to prevent sickness and protect health. The so-called wonder drugs

and other advances in medicines and in methods of treatment have reduced somewhat the problems of healing and have made it possible to devote more attention to preventing health trouble. This, of course, is only a shift in emphasis but it is sufficiently marked that it should be taken into account in designing programs of education for the health professions. And it should be noted that, as the emphasis shifts from cure and care to prevention and protection, the physical and social environment becomes increasingly relevant for the study of the human organism.

It should be noted, too, that the same shift in emphasis raises problems of an inter-professional character. These, however, will be considered in connection with the next point.

Prepare practitioners in each health profession to function cooperatively with other health professionals, paramedical personnel, administrators and others in patterns of practice more efficient for the total community.

The physician commonly thinks of himself as the captain, quarterback and coach of the team of professional and semi-professional persons concerned with health; or, as one participant in the Symposium puts it, as though he were Pope and the others parish priests. This is understandable, for the young physician soon detects something akin to reverence in the attitude of frightened, stricken patients toward him as the healer. He is conscious of the great trust parents must put in him when their children are in peril from causes beyond the parents' ken. For the stricken his word is law and it is the same for the others attending the stricken. Pride in one's profession is essential, but the physician especially, it appears, is subject to influences which can inflate this legitimate pride into a serious handicap to the smooth functioning together of the various health professions for the maximum benefit of humanity.

As professional specialization increases and as the scope of concern of the professions expands, health care and protection become more and more a team undertaking. The physician must work with other health professionals, with paramedical personnel and often with social scientists and public authorities. These, too, have pride of profession or specialized competence which the physician must learn to respect. His professional school training should prepare him to function harmoniously as a team member.

A special word is warranted with respect to the effective use of paramedical personnel. While there continues to be dispute over the extent of predictable personnel shortages in the health professions, this much can be said with some assurance: The level of health care and protection expected

for all is rising, while the rate at which new professional practitioners are being prepared is lagging behind the projected population growth. We will have difficulty providing enough professionals to maintain present levels of care, let alone provide the higher levels which apparently will be demanded. Therefore, the professional will have to learn to devote his time more strictly to what only he can do properly and to use paramedical personnel as extensively as is compatible with good practice.

The rising costs of health services generally and hospitalization particularly are causing practitioners to adopt new patterns of practice, including greater use of out-patient clinics and ambulatory care, reduction of time of hospitalization and more discriminating resort to hospitalization, and experiments in more extensive home care of patients. These developments should be reflected in the health profession schools' programs.

Reduce the amount of rote learning in health profession schools and stress more the ability to analyze problems and to continue one's self-education in these rapidly advancing professional fields.

Practitioners of the health professions are acutely aware that they have had to learn a great deal since they received their formal degrees, in order to keep up with scientific advances and social developments. Education for a health profession is only partly achieved if it gives the new practitioner just the knowledge and competence he needs immediately upon entering practice. In addition, it should, indeed must, prepare him to continue his self-education throughout his professional career.

Fundamentally what is needed is greater emphasis on the ability to analyze problems; and the teaching process in professional schools should be carried on in ways which will develop this ability. This means less dependence on rote learning and more analytical experience, more experience with scientific methods of investigation, more cultivation of curiosity. The pre-professional liberal arts education should foster this mental set in the student, but his professional training should encourage it in relation specifically to the professional field.

Furthermore, the limited teacher resources of health profession schools must be employed as effectively as possible to meet the need to train ever more professional people. Too much time is devoted to the kind of rote teaching that can be done as well by machines or the human equivalent of machines as by truly able teachers. Greater imagination in laying out and conducting professional education programs can use the able teacher's time better by relying more on the student's ability to think and to find out for himself and, in the process, develop professionals better equipped to keep abreast of developments in the rapidly changing health professions.

Provide greater flexibility in curricular patterns and training schedules, especially in schools of medicine, in order to encourage research and cultivate the brightest minds.

Typically the same nine-year program of education is experienced by all students who would graduate from a medical school. For this period, all are compressed into the same mold, whether they later are to be practitioners, researchers, neuro-surgeons or something else. The question is whether this rigid mold, spanning such a lengthy period of preparation, should be made more flexible. The Symposium participants felt it should be, but they refrained from going into details of how this might be done because they viewed that as more appropriately a question for the educators to take up.

The principal disadvantage of the rigid mold is the effect it appears to have on the especially inquisitive minds of those from whom new advances in medical science are most likely to come. Whereas the bright young graduate student in physics is permitted and encouraged to explore lines of interest to him individually and to differ with and challenge his instructor, the equivalent student in medical school is being led through a predetermined course of experience. The medical student is under strict tutelage and has little opportunity or encouragement to strike out on his own intellectually.

The brightest minds are repelled by this sort of experience. There is some evidence that persons possessing such minds avoid medical school and more evidence that those who do attend lose the enthusiasm, originality and creativity that is their great gift. Research aptitude can be identified with some degree of assurance and motivation can be cultivated if the educational program is sufficiently flexible. Perhaps the present pattern is the best single one for medical training, but need there be a single pattern? Intellectual unrest and curiosity should be encouraged, even if that means complicating the medical educators' task, for progress of the profession is dependent thereon.

The discussion of this point in the Symposium was confined to medical schools but it may well contain a suggestion for other health profession schools as well.

Reduce, where possible in the educational experience, the conditions that cause emotional maladjustment of scientific research personnel.

The relationship of the intellectual to society is, perhaps, always one of tension, and some degree of social maladjustment may be not only characteristic of but essential for those pursuing advanced intellectual goals. But emotional maladjustment and mental disturbances can be a serious handicap to the productiveness of our best minds. Several Symposium participants

were convinced that the incidence of emotional disturbance was especially high among scientific research persons and that this constituted a serious problem.

The potential scientific researcher quite often feels set apart from other persons. He probably was ahead of his age group in school, devoted so much time to his consuming interest in investigation that he did not share the interest of others in baseball batting averages and the like. The demands of advanced scientific study further segregated him from others, and by the time he is ready to launch his career, he may well feel disturbed by the difference he observes between himself and others.

The difference, of course, is valuable. His intellectual unrest and curiosity are to be fostered for his own and humanity's benefit. But, where possible in his educational experience, the conditions that cause emotional maladjustments to develop and interfere with his research work should be minimized. How this can be done, the Symposium participants did not attempt to say, but they did feel that educators should be alerted to the problem of the high incidence of emotional disturbance among scientific research persons and the fact that such persons' educational experience may have something to do with it.

Equip members of the health professions with communication skills that will enable them to interpret their professions to persons outside those professions.

Members of the health professions frequently complain of lack of public understanding and appreciation of the work of their professions and deplore the unreliable character of much of the information on health matters purveyed to the public by non-professionals. At least part of the fault may lie with the health professions people themselves, because of their inability to communicate effectively with persons outside their professions.

The individual's pre-professional preparation in secondary school and liberal arts college should provide the basic communication skills and the professional school's admissions practices should assure that the basic skills are there. Beyond that, however, the individual's professional training should sharpen and refine his ability to communicate the complex, specialized content of professional health knowledge. Fuzzy expression usually is a reflection of fuzzy thinking, which the rigorous health disciplines cannot tolerate. The student should be made aware constantly during his professional training that clarity of expression and accuracy of comprehension are important professionally.

Furthermore, every health profession practitioner should be a spokesman for his profession to the lay public. As will be seen under the next point

discussed, much of the general education on health matters can best be provided informally by doctors, nurses and other practitioners at times when persons, as patients, are especially receptive. Health professionals have a professional obligation to assist general education in this way, but they can do so adequately only if they have the communication skills for it.

Some of the Symposium participants also felt that the professional schools could and should reform the attitude of health professionals that writing or speaking on health matters at the popular level was somehow beneath the dignity of the profession. Unless the professionals interpret their own work, the non-professionals will, often with the inaccuracy and unreliability which the professionals frequently deplore.

Give all young people, in their general education, an understanding of biological principles and of sound nutrition, hygiene and physical fitness.

One participant in this Symposium observed that we do not know reliably how much and what most people really do know about their own bodies and health matters generally. We should find out, but even now we can be pretty sure they do not know as much as they should in order to lead the balanced good life.

One reason we do not know more accurately what people do know is the taboo that still exists for free discussion of and formal instruction in health matters. The bodily functions and sex matters, for instance, present difficulties and, in a slightly different way, so do mental disturbances and psychological matters generally. The difficulties are especially great at the pre-college levels. Much of the health information that everyone should have, therefore, can best be given informally and indirectly.

The study of biology may be a more practical approach than instruction specifically in human health. At least some of the participants felt that a course in biology—not biology *or* another science—should be compulsory at the secondary level. And several felt also that, at the college level, biology should be required for all. Parents provide much of the health education children get and consequently should be prepared to give reliable information. The educational system, in other words, should try to work indirectly through the family context to supplement what it can do directly with the child in school, thus getting around the taboo that handicaps formal instruction at pre-college levels.

The professional school also has an obligation with respect to general education. Professional training should prepare the health practitioner to communicate effectively to the non-professional public, as mentioned under the preceding point, so that he can use opportunities that come his way to

acquaint patients with health matters. Good practice should include, as a matter of course, informal instruction in sound nutrition, hygiene and physical fitness. As regards physical fitness especially, our way of living is such as to provide too little exercise for most unless the individual is induced to seek it out.

Practitioners believe that the elementary and secondary education should include more information about the full range of activities in the health professions to dispel misconceptions, say, concerning the physician's job, and to awaken individual interest in the health professions as occupational goals. Health profession schools now have only a limited supply of the best suited and motivated students from which to select. Many of the better minds are responding to the lures of engineering and physical science, which commonly are glamorized for the youngster.

Develop in all young people competence in evaluating authority for statements and sources of information in fields in which they are not specially trained.

This point is deliberately expressed in general terms, rather than restricted to health matters. The point came up in this Symposium in relation to the health knowledge, but the discussion indicated that a broader application was intended. In a complex society such as ours, with much specialization of knowledge, the individual must depend to a great extent on what he is told by others in fields in which he is not specially trained or educated. He cannot make himself fully proficient in all fields that are important to him. He can and should learn, however, to evaluate authority for statements and to discriminate among sources of information upon which to base his personal decisions and actions.

In health matters, this ability to evaluate is of vital importance. There is no possibility that all generally educated persons can be taught to comprehend the whole field of health science. Not even the individual health professional can be taught that. Yet the individual will have frequent occasion to make decisions involving his physical welfare or even his life on information which he does not command first-hand. He must depend on the judgment of others and he must be able to judge with some confidence whose judgment to follow.

Somehow, somewhere in the general education provided everyone, the individual also should gain an awareness of how one fools oneself, of the tricks the mind can play on one, of how desire or fear or other emotions can influence one's judgment. Those who are expert at manipulating emotions can mislead the individual unless the latter is aware of how the mind works and is influenced. Some knowledge of the psychology of human behavior, therefore, will enable the individual to judge his own responses as well as evaluate authority.

THE CULTURE AND VALUES SYMPOSIUM

Roster of Participants

DR. HENRY W. BROSIN, Director, Western Psychiatric Institute and Clinic.

JOHN G. BUCHANAN, SR., Esquire (Buchanan, Ingersoll, Rodewald, Kyle and Buerger).

W. GEORGE CROUCH, Chairman, Department of English, University of Pittsburgh.

SOLOMON B. FREEHOF, Rabbi, Rodef Shalom Temple.

CARL E. GLOCK, SR., Esquire (Reed, Smith, Shaw and McClay).

LELAND HAZARD, Vice President, Pittsburgh Plate Glass Company.

MRS. FERNE HORNE, Director of Guidance, Mt. Lebanon High School.

PUTNAM F. JONES, Dean of the Graduate Faculty, University of Pittsburgh.

CHARLES LECLAIR, Professor of Art, Chatham College.

RALPH MUNN, Director, Carnegie Library of Pittsburgh.

CHARLES H. PEAKE, Vice Chancellor—the Academic Disciplines, University of Pittsburgh.

DR. JONAS E. SALK, Director, Virus Research Laboratory.

A. W. SCHMIDT, President, A. W. Mellon Educational and Charitable Trust.

GLADYS SCHMITT, Author and Professor of English, Carnegie Institute of Technology.

DONALD STEINFIRST, Music Critic and President of Lastik Products, Inc.

GORDON WASHBURN, Director of Fine Arts, Carnegie Institute.

THE CULTURE AND VALUES SYMPOSIUM

suggests that educators,
in reappraising their policies and practices,
be guided by the need to:

Adapt educational programs and practices to man's inherent or biological nature and needs, with the aim of developing the potentialities of each person in all his uniqueness and individuality.

Educators necessarily shape their programs and policies according to some underlying conception they have of those who are to be educated and the aim or purpose of the education. The participants in the Culture and Values Symposium devoted much of their discussion to these fundamentals, confusion in regard to which they felt was responsible for much of the current disagreement over education. Because of their diverse backgrounds, the participants used diverse terminology in formulating their conceptions but, nevertheless, reached substantial consensus.

The aim of education in our society should be to develop as fully as possible the potentialities of each person in all his uniqueness and individuality. Other societies may have other aims. Education in the Soviet Union, for example, appears to be trying to produce a Soviet man, one who is conditioned and trained to the service of the collective state. The aim of education in the United States, although it may seldom be stated explicitly, is clearly implied by our history and tradition. It is to call forth in the individual his latent talents and abilities, to enable him to achieve maximum self-realization, to open before him as wide as possible a range of possibilities from among which he can shape his own life and career. The aim of education in our society, in other words, is to be formulated primarily in terms of the individual's development, rather than in terms of the community's, the nation's, or society's needs. Some participants discussed the point along the foregoing lines, while others reached the point by a different approach.

Scientists in the Symposium, for instance, used the expression "biological needs" to distinguish that which is inherent in the individual from that which originates from without. A human being, as a biological entity, comes into existence with a certain nature and needs. The nature has plasticity and the intensity of the needs varies among individuals, but they exist within. Not alone the biological but the psychological and sociological sciences are producing ever more extensive knowledge about this nature and these needs and are providing ever more reliable indications of what are a person's inherent limitations and possibilities. Among other things,

as one participant put it, they are giving us laboratory verification of many old scriptual themes—that man does not live by bread alone, for instance. Sensory deprivation experiments indicate that man is not bound by his skin. Spiritual, psychic, aesthetic needs are as real and internal or inherent as are the needs for food and air; and hence they are "biological" in the sense in which some of the participants used that word. The individual comes into the world with certain potentialities, which may or may not be realized, depending on his life experience. Education cannot create potential talent or ability in the individual, but it can activate or sensitize and develop what it finds there. And to do just that, as fully as possible, should be the aim of education.

What unites the diverse points of view represented in the Symposium is their common focus upon the individual. Moralist and artist, scientist and executive, they suggest that educators, in defining their purpose and developing their programs and practices, look to human nature and the inherent needs of individuals.

Instill an awareness of value issues, a sense of individual responsibility for value judgments and an inner pride in accomplishment and in pursuing excellence.

Awareness of value issues certainly is as essential as any other knowledge that an educated person may have. And being aware of value issues is meaningless unless a person accepts the issues as real ones for him personally, unless he acknowledges to himself his individual responsibility to make his own value judgments. Unfortunately the virtue of objectivity sometimes is misconstrued in academic circles, and elsewhere, to mean indifference. It is true that a person acquires most of his values in the family, the church or elsewhere than in formal educational institutions, but a mark of the educated person is that his values are examined values, ones that he can defend against challenge and of the alternatives to which he is aware. An education that has not had this effect, has not made the student aware of value issues and sensible of his commitment to values, is seriously deficient. Philip E. Jacob's *Changing Values in College* suggests that much of the educational experience now provided is deficient in this respect. The Symposium participants confirmed that impression by their own observations.

To what extent particular values can or should be taught in school, college and university is disputable. One consideration is the possibility of conflict between the values inculcated by family or church and those fostered by the school. And certainly, with the diversity that exists in our educational system, no comprehensive set of values could be formulated,

acceptable to and appropriate for all the institutions. Nevertheless, there are some values for the inculcation of which all educational institutions should share responsibility, for these values are inseparable from intellectual development.

The particular values, which any educational institution should feel obliged to foster, are closely related and, perhaps, are even several aspects of the same underlying value. They include inner pride in accomplishment and individual achievement, respect for intelligence and creativity, dissatisfaction with slipshod performance or what the Rockefeller report called *The Pursuit of Excellence*. A young person's entire formal educational experience should be calculated to disabuse him of the idea that an average grade or an average performance, with which to "get by", is just as good as an excellent grade or performance and to imbue him with an inner sense of satisfaction in doing the best he can.

Provide every educated person with a common core of liberal learning, formulated by mature judgment of what is essential in our intellectual heritage.

Young people in secondary school and college are not yet wise enough to be made responsible for choosing a balanced diet out of a cafeteria of elective course offerings. On this point, the Symposium participants were unanimous and emphatic. Educators are shirking their responsibility when they, in their mature wisdom, defer to the immature whims of students or uninformed fancies of parents. A common core of liberal learning should be prescribed for all who are to be deemed educated and the educators, not the students— like the physicians, not the patients—should write the prescription.

What constitutes a liberal education appropriate for our times should not be difficult for educators to say, at least in general terms. It has been well stated, among other places, in *General Education in School and College*, by the faculties of Andover, Exeter, Lawrenceville, Harvard, Princeton and Yale. What is needed principally is firmness by educators in protecting the core of liberal learning against dilution by vocationalism and distortion by every passing cultural fad and public "crisis". We are heirs to a great intellectual heritage, the essentials of which should be acquired by everyone to the extent that his learning ability permits. But not all studies can be called liberal, because not all liberate the mind, however well they may serve some other purposes, such as reducing traffic accidents or entertaining football spectators between halves.

A widely shared common core of liberal learning is especially important for a complex society such as ours, with great individual specialization and

representative democratic government. Continuation of the great conversation that is civilization depends upon it, for the various specialists can speak to each other not in the language of their specialties but in the language of the liberal arts they share. And the liberal arts, incidentally, include the natural sciences as well as the social sciences and humanities.

Of course much specialization is necessary in our advanced society. And, of course, young people should be prepared to earn a living. But these considerations must not obscure the need also for breadth of understanding and for the wisdom to be derived from a liberal education based on mature judgment of what is most important in our intellectual heritage.

Cultivate in young people the character and intellectual resourcefulness to live with uncertainty, to adapt to change, and to resist social pressures toward conformity.

Some of the characteristics of our times and of our society constitute a special challenge to education. Among these are the uncertainty or unsettledness of knowledge when all is subject to investigation, the geometric progression of change which science and technology have set going, and the danger latent in a democratic society of submergence of the individual in the group. All these have this in common that they call for strength of character and intellectual resourcefulness in the young person who will have to live among them.

Although men always have lived in a state of imperfect knowledge, seldom have they been as conscious of the fact as now when the scientific attitude has made yesterday's established truth today's hypothesis for further investigation. Young people seeking certainty and clear-cut answers will be less disturbed by failure to find them if their educational experience has prepared them to live with uncertainty, to find confidence in recognition that it has been man's lot to quest continuously for knowledge.

The rapid rate of change in our scientific and technological society makes adaptability essential for those preparing for positions of leadership in that society. The breadth of a liberal education will help, but in addition there is needed the mental set or attitude to respond readily to changing conditions and demands. A young person's educational experience should foster in him the venturesome spirit that will make change a stimulating challenge rather than a paralyzing prospect.

One great danger of a broadly representative democracy, as de Tocqueville long ago pointed out, is that of submergence of the individual in the mass, of bland conformity and superficiality. With modern media of mass communications and the cult of "togetherness", social pressures toward conformity have great force; and much strength of character and intellectual

resourcefulness are needed to resist it and to preserve individual integrity. Educational practices as well as programs should be devised so as to cultivate such strength and resourcefulness, by developing the student's ability to think independently and to exercise his own good taste and judgment.

Develop in young people communication skills commensurate with the increasing demands our complex society makes upon them.

Whether our educational system develops reading, writing and other communication skills less well now than in the past is subject to debate. Even if it is conceded that the average secondary school graduate now writes less well than the average graduate 20 years ago, it must be acknowledged that the larger number of graduates now includes persons of lesser native talent. Still, our objective in universal secondary education is to give as good an education to all as the favored few once got. Therefore, whether the decline in communication skills is apparent or real, there is room for improvement.

There is no disputing that the demands made on communication skills are becoming increasingly rigorous. Increasing specialization of vocations makes communication at once more necessary and more difficult. And the very complexity of an advanced scientific and technological society adds to the difficulties. The individual, in order to understand and to function effectively in his milieu today, must be able to read more, read a more varied and intricate fare, and read more accurately than before. The demands on the ability to write and speak are increasing in like measure.

At least some of the Symposium participants believed that the development of communication skills has suffered from the virtual disappearance of Greek and the progressive departure of Latin from the secondary curriculum. The classics do instill an appreciation of the structure and form of language and do develop a discipline for the use of languages generally. With the possible exception of the Germanic, modern languages do not contribute to competence in English as do the classics. Whether a restoration is in order or whether other more effective means of improving command of the English language are to be used is a choice for educators. The Symposium participants were agreed only that more emphasis somehow should be put on communication skills.

Allow opportunity for contemplation and self-study by the individual during the years of his formal education.

In our zeal to provide maximum educational opportunities for young people, we should not overlook the fact that much, and perhaps the most vital part, of the learning process takes place not in the classroom and not in direct response to instruction, but alone in moments of contemplation.

Education is but a superficial veneer unless it is made a part of the individual through self-examination. From the outside, unfortunately, contemplation and idleness are virtually indistinguishable, tempting us to fill the young person's every idle moment with overtly worthwhile activity.

Enough is known about the learning process to convince us that it takes place at a biologically determined tempo which varies from individual to individual and even varies over time for the same individual. We do not know enough about it yet, however, to be very accurate in conforming our educational schedules to it and we would be unwise to act as though we knew more than we do. Until more is known, our wisest course is to allow a margin of error, to provide more opportunities than requirements for study and to schedule the young person's time loosely.

Much has been heard recently about achieving more efficient use of educational facilities by using them more nearly full time. The rising costs of education and the swelling school enrollments certainly justify the search for greater efficiency. Neither these considerations nor any others, however, can justify speeding the individual's educational progress beyond the rate at which he can effectively absorb the experience and this rate cannot be measured simply in terms of class hours. There must also be time allowed for contemplation.

Prepare prospective parents and professional teachers to perform as effectively as possible their role as models for emulation by young people.

In regard to culture and values especially, it is difficult to determine how much is taught and how much is caught. Certainly a young person acquires much by emulation and those who play the principal roles of model for him are likely to be his parents and his teachers. Because identification and imitation are so important in the learning process, the education of prospective parents and the preparation of professional teachers should be designed accordingly.

New scientific knowledge about the learning process in human beings indicates that the pre-school years of the child are much more important in determining what can be done for him in school than had been supposed. What and how the child is taught within the family especially, in the first 24 to 60 months, pretty much establish his attitudes and mental set, so that the formal educational system is working on a semi-finished product. Consequently, to a considerable extent, schools are educating not the students in their classrooms but the students' children-to-be, the subsequent generation. The effectiveness of formal education, therefore, is to be judged

not alone by the quality of graduates but also by their children's respect for and motivation toward learning.

The preparation of the professional teacher should include not only command of a particular subject and pedagogical techniques for transmitting that but also general intellectual qualities worthy of emulation. This means a broad liberal education, if that is what we would have his or her students aspire to. And it means a love of learning and enthusiasm for the subjects to be taught. Participants in this Symposium were convinced that certification requirements at the secondary school level still discouraged and repelled many who would make outstanding teachers, although they felt the situation probably was improving. One participant recalled the cry of "throw out the dietician and get a cook" to suggest that we throw out the pedagog and get a teacher, a significant person who will be a worthy model for his students.

Provide coherence and continuity in the individual's educational experience by lessening the rigid departmentalization of knowledge and coordinating the levels of the educational system.

Undergraduate education strives to give the student a balanced view of life, but rigid, vertical departmentalization of knowledge makes this difficult. However justified the departmental system may be at the graduate level, it should not be permitted to interfere with the undergraduate school's obligation to give some coherence to its liberal education programs. Horizontal integration of knowledge cannot safely be left entirely to the student but should be facilitated by the structure of the educational program.

Neither should the student be obliged to piece together his education from the offerings of institutions at two or three levels of an educational system without some effort being made by the institutions to minimize the danger of gaps and duplication in his total program. The way our educational system has evolved has made the student's difficulties in achieving continuity especially great. Educators at all levels of the system should acknowledge responsibility for the situation and should seek ways to coordinate their efforts in order to provide as nearly as possible a continuum of educational experience.

Both the layer-cake system of education and rigid departmentalization of institutions within a level of the system are artifical impositions which tend to fragment and disorganize knowledge. Both have their reasons for being and the Symposium participants were not suggesting a single monolithic organization of educational facilities. But they were urging educators to do whatever reasonably can be done through cooperation to lessen the burden now borne by students to coordinate the elements of an education.

THE TASK AHEAD

The Regional Commission, having completed the first phase of its program with the Symposium reports, is proceeding now to the second phase.

Teachers and administrators from schools, colleges and universities throughout the Upper Ohio Valley Region have been enlisted in an organized effort to improve the quality of education through better coordination or articulation of programs at the several levels. Approximately 500 of these educators, from eight universities, 25 colleges and a large number of school districts throughout the region, are participating in more than a score of panels (See Page 5A). Several of the panels are concerned with the continuity of secondary school and college programs of study in major academic areas. Others are concerned with the relationship between college education and the various fields of professional training or graduate specialization. Their common objective can be stated simply: coherence and continuity in the total educational experience of those able young people who progress from secondary school to college and professional or graduate school. Achieving that objective, however, will be an immensely complicated and challenging task.

To assist and encourage the educators in their task, the Regional Commission has tried to provide some reliable guidance as to what responsible and experienced leaders of today believe to be especially needed in tomorrow's learning. The reports developed from discussions among these leaders are intended to provide a supplementary perspective for educators and to suggest the kind of career demands that will be made upon persons educated for leadership in our society. While each panel of educators probably will find one or another of the reports especially relevant, all of the reports taken together suggest several general questions which the Regional Commission commends to the attention of all educators.

1. How can the increasing career specialization in our complex society be reconciled with the need for a common sense of social purpose and broadly shared cultural values?
2. How can our educational institutions develop both the whole person and the competent professional within reasonable time limits?
3. How can able young people be identified, motivated and advised so that they pursue educational programs calculated to develop their full potential?
4. By what methods and means can the tools of learning be taught and the desire to learn be instilled so that formal education becomes the beginning of a life-long process?

5. What adaptation of curricula at all levels is called for by the increasingly pervasive influence of science and teechnology, of big organizations and of foreign affairs on American life?

6. How can standards of excellence be maintained as secondary schools, colleges and universities adapt to the prospect of larger numbers of young people seeking to continue their education to higher levels?

These, the Regional Commission believes, are some of the general questions, specific variations of which each of the panels will want to consider in its area of concern. The panels of educators have been asked first to identify and formulate for themselves the specific problems of coordination or articulation which they recognize in their particular field, and then to develop recommendations for solving those problems. Since each panel includes participants from several institutions at two or more of the levels of our educational system, the recommendations will represent a meeting of minds of school, college and university people as to what should and can be done at each level.

The cooperation already evidenced by widespread participation in this program encourages the Regional Commission to believe that the experience of teachers from the several levels meeting together and exchanging ideas on problems of common concern will have an immediate beneficial effect upon the entire educational system. Publication and distribution of their recommendations should reinforce and spread the influence. In addition, the Regional Commission has arranged for implementation of the recommendations on a demonstration basis in a representative complex of institutions. The Commission is hopeful that the combined wisdom of so many people at all levels eventually will produce a coherent educational system that will develop our human resources to the fullest and thereby promote the general welfare of our free society.

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